

Developments in Global Climate Change Policy

The previous sections have explored what scientists know about emissions of greenhouse gases from transportation sources and the implications of global climate change. Given the risks, the United States and the international community have taken steps to learn about and respond to the threat of climate change. This section discusses developments in international global climate change policy and US policy initiatives aimed at reducing greenhouse gas emissions from transportation.

4.1 INTERNATIONAL DEVELOPMENTS

Recognizing that climate change is a global issue, many nations of the world have worked together over the past decade to develop international consensus on the most appropriate means of response. These evolving discussions have recently culminated in the “Kyoto Protocol,” which sets legally-binding collective targets for 39 developed and transitional countries to reduce greenhouse gas emissions.

The Kyoto Protocol comes after many years of international discussions on the issue of global climate change. Over this time, our knowledge on the issue has increased dramatically, setting the stage for the international actions that have recently taken place. This section of the report provides a brief chronology of these developments.

In November 1988, the Intergovernmental Panel on Climate Change (IPCC) was organized under the auspices of the United Nations (UN). The IPCC was formed to assess scientific information on global climate change and to assess response strategies, under a framework of wide peer-review. Since the IPCC’s *First Assessment Report on Climate Change* in 1990, which concluded that emissions from human activity are substantially increasing greenhouse gas concentrations, many governments have adhered to a so-called “no regrets” policy. Under a “no regrets” policy, actions are implemented that would not only reduce greenhouse gas emissions but would also provide other benefits. Typical actions under a “no regrets” policy include energy efficiency and conservation, planting trees to enhance CO₂ sequestration from the atmosphere, and fuel substitution.

During the 1990s, the US position on global warming has become more proactive, just as many nations of the world have begun to more fully recognize the consequences of inaction. The Bush Administration followed a “no regrets” policy, without actually committing to CO₂ targets and timetables, as a step toward establishing a majority of industrialized nations whose governments pledged to stabilize their CO₂ emissions by the year 2000. In June 1992, representatives from 176 countries met in Rio de Janeiro at the “Earth Summit” to work together to develop a plan for global climate change. “No binding target” was a basic tenet of the US position during negotiations for the *Framework Convention on Climate Change (FCCC)* in 1992. The FCCC ended up calling for a voluntary reduction of greenhouse gases to 1990 levels by the year 2000. The United States signed the FCCC on June 12, 1992. In total, 170 other nations have joined the US in signing the agreement.

In April 1993, President Clinton announced he would reverse US policy and commit to the target and timetable expressed in the FCCC. The *Climate Change Action Plan (CCAP)*, announced in October 1993, described how the US would meet those targets and respond to the FCCC. The CCAP laid out nearly 50 voluntary initiatives in all sectors of the economy, including transportation.

The First Conference of Parties to the *FCCC* (COP-1) met in Berlin, Germany, in March and April 1995. This was the first opportunity for *FCCC* parties to consider amendments or a separate protocol to the treaty. The US delegation affirmed that it remained the policy of the United States to pursue climate change measures beyond its 2000 stabilization goal but that the US would likely face a 30 percent shortfall in achieving 1990 greenhouse gas emission levels by 2000. Other countries announced they also were behind schedule in attaining *FCCC* targets.

Seeking grounds for a uniform approach toward climate protection, the COP expressed concerns about the adequacy of countries' current commitments under the *FCCC*. This concern was expressed in a United Nations ministerial declaration known as the "Berlin Mandate." Under the Berlin Mandate, parties launched a negotiating process designed to produce a new treaty protocol to deal with actions in the post-2000 period. The protocol was expected to include a "comprehensive menu of actions" from which countries may pick and choose options to address climate change. The protocol served also as a uniform approach to reporting emissions and measures.

In December 1995, the Intergovernmental Panel on Climate Change (IPCC) released its second report. The report concludes that available data and models confirm a link between human activities and global climate change. This report provided further impetus for international actions to reduce greenhouse gas emissions.

Representatives of those nations signing the *FCCC* met in Geneva in July 1996, to discuss how to accelerate reductions in greenhouse gas emissions. This Second Conference of Parties (COP-2) was to refine proposals into concrete actions that could be discussed at a later meeting. The United States voiced support during the conference for development of internationally enforceable targets for reducing greenhouse gases. US negotiators continued to reject the imposition of "harmonized policies and measures," including uniform Corporate Average Fuel Economy (CAFE) standards and energy taxes. They stressed a preference for flexible measures, such as bilateral efforts using emissions trading. The resulting *Ministerial Declaration of the Second Conference of Parties*:

- ◆ Accepted outright the scientific findings on climate change in the IPCC's *Second Assessment Report on Climate Change*;
- ◆ Rejected uniform "harmonized policies" in favor of flexibility; and
- ◆ Called for "legally binding mid-term targets."

On January 17, 1997, the US State Department released a draft protocol that lays out specific responsibilities for countries to help reduce the threat of global warming. The draft protocol was the United States' contribution to the negotiations initiated by the Berlin Mandate. The US plan would establish a multi-year "budget" for greenhouse gas emissions, with a specific cap on the amount of greenhouse gas emissions an industrialized country could release during that time. Caps would be a percentage of greenhouse gas emissions each nation released in 1990. If a nation fell under budget, it could transfer its savings to the next period, or sell off its excess emissions allowances. Alternatively, countries emitting over their budget could use part of the next budget period's allocation, but would have to include extra emission cuts in their paybacks—a form of "interest." The US proposal would set up an international trading regime for greenhouse gases. The US proposal also would require all developing countries to take "no-regrets" actions to control their greenhouse gas emissions, and report annually.

These actions fed into talks that resumed in late February 1997, which led to the US participation in the Kyoto Protocol. On December 11, 1997, the Third Conference of Parties (COP-3) to the *FCCC* adopted the "Kyoto Protocol" setting legally-binding collective targets for 39 developed and transitional countries (referred to as "Annex B" countries in the Protocol) to reduce greenhouse gas emissions. The Kyoto Protocol covers six major greenhouse gases, including carbon dioxide (CO₂), methane, nitrous oxide,

hydroflourocarbons (HFCs), perflourocarbons (PFCs), and sulfur hexaflouride (SF₆) and allows the latter three synthetic gases to use a 1995 baseline year in lieu of the 1990 baseline year use for anthropogenic CO₂ emissions.

The Kyoto Protocol calls for the aggregate reductions of all six greenhouse gas emissions collectively by 5.2 percent from a 1990 baseline in Annex B countries between the first commitment period of 2008-2012. The agreement includes individual reduction targets of 7 percent for the US, 8 percent for the European Union, and 6 percent for Japan. Emission increases above 1990 levels are approved for Australia, Iceland, and Norway (these countries will be allowed increases in greenhouse gas emissions by 8 percent, 10 percent, and 1 percent respectively). Each party must show demonstrable progress toward meeting its target by 2005.

The protocol will be opened for signature between March 16, 1998 and March 15, 1999 and afterward transmitted for acceptance by Parties. It will enter into force ninety days after 55 Parties or more (accounting for 55 percent of the carbon dioxide emissions from all developed countries in 1990) have ratified the Protocol. Rules and guidelines will be established by the Conference of the Parties, starting with its next session in November 1998 in Buenos Aires, Argentina. The next session may discuss topics such as emissions trading, joint implementation of reduction strategies among developed countries, and clean development mechanisms in developing countries. Compliance mechanisms will also be discussed for further development at the next meeting for the Conference of the Parties. The Protocol will be amended later to reflect the measures or penalties associated with non-compliance.

International discussions about greenhouse gas policies have progressed significantly in recent years. Exhibit 4-1 provides a chronological summary of US positions and key international negotiations and agreements. The sections that follow the table describe a few of the major US policy initiatives on climate change.

Exhibit 4-1. Milestones in Global Climate Policy

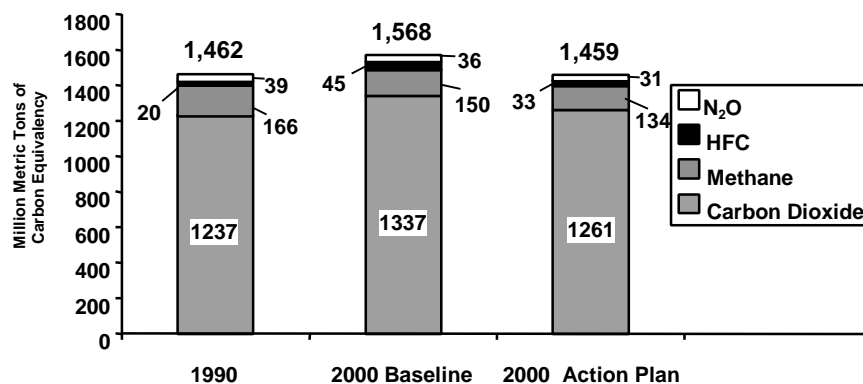
Date	Policy Milestone	Description
November 1988	Intergovernmental Panel on Climate Change (IPCC) organized under United Nations auspices	IPCC is organized to assess the scientific information “related to various components of the climate change issue” and to formulate “response strategies.” IPCC work is to be widely peer-reviewed.
August 1990	IPCC “First Assessment Report on Climate Change”	IPCC concludes that emissions from human activity are substantially increasing greenhouse gas (GHG) concentrations. It stopped short of concluding that human activities are substantially affecting global warming.
June 1992	US agreement to work GHG reductions, without firm targets	President Bush supports policy of reducing GHG without committing to CO ₂ targets and timetables. This is to be the US position while negotiating treaties.
June 1992	Framework Convention on Climate Change (FCCC)	The FCCC commits signatories’ governments to voluntary reduction of GHG with the goal of stabilizing global emissions at 1990 levels by the year 2000. Treaty provides flexible, voluntary, and general framework. Signed by 154 nations, including the US.
April 1993	Firm targets for reducing US GHG emissions	President Clinton announces he will seek measures to stabilize US emissions of GHG by the year 2000.
October 1993	US Climate Change Action Plan (CCAP)	The CCAP highlights nearly 50 new or expanded initiatives to reduce US GHG emissions. Initiatives focus on all sectors of the economy, including transportation.
September 1994	US Policy Dialogue Advisory Committee to Assist in the Development of Measures to Significantly Reduce Greenhouse Gas Emissions from Personal Motor Vehicles established	Advisory committee is established to develop consensus on policies to cost-effectively reduce GHG emissions from motor vehicles. Interim report issued in 1995; no consensus reached.
March 1995	First Conference of Parties to the FCCC (COP-1) and the “Berlin Mandate”	Nations that signed the FCCC agree to negotiate additions to the FCCC that address specific actions to be taken in the post 2000 period, as well as a uniform approach to reporting emissions and measures.
March 1995	Reports on progress reducing greenhouse gases	US affirms its GHG reduction targets but notes that it is 30% behind in achieving those reductions by the year 2000. Other countries also announce they are behind on reducing gases.
December 1995	IPCC “Second Assessment Report on Climate Change”	Report concludes that evidence indicates (1) a discernible human influence on global climate, and (2) it is still not possible to link particular impacts with specific atmospheric concentrations of GHG.
July 1996	US commits to internationally binding targets and timetables for GHG reductions	Targets and timetables not yet specified; US plans to develop them by end of 1996.
July 1996	Second Conference of Parties to FCCC (COP-2)	Parties agree to (1) accept IPCC findings in Second Assessment, (2) reject uniform policies in favor of flexibility, (3) work toward legally binding mid-term targets.
January 1997	US Draft Protocol	The US proposes an emissions budget and trading program for greenhouse gas emissions after the year 2000.
December 1997	Third Conference of Parties to FCCC (COP-3)	Parties vote to accept the proposed protocols and amendments to the FCCC.

4.2 US INITIATIVES AND TRANSPORTATION

The US Climate Change Action Plan

The Climate Change Action Plan (CCAP), announced by President Clinton and Vice President Gore in October 1993, was the initial basis for the US response to the international *Framework Convention on Climate Change*. The goal of the Plan was to return US greenhouse gas emissions to 1990 levels by the year 2000. In order to meet this goal, the CCAP includes nearly 50 new or expanded initiatives in all sectors of the US economy—commercial, residential, industrial, and transportation. Cumulatively, actions—most of which were voluntary and built upon market-based strategies—were expected to reduce greenhouse gas emissions by 108.6 mmtCE from the year 2000 baseline. Emissions were to be reduced from 1,568 metric tons of carbon equivalent (mmtCE) in the base case to 1,459 mmtCE, with implementation of the Action Plan in the year 2000, as shown in Exhibit 4-2.

Exhibit 4-2.
CCAP Greenhouse Gas Emissions Estimates



Under the action plan, net carbon dioxide emissions were projected to be about 2 percent above their 1990 levels in the year 2000. Hydrofluorocarbon (HFC) emissions were also projected to grow but at only half the rate of increase without the action plan. Offsetting these gains would be significant decreases in methane and nitrous oxide.

For the transportation sector, the Action Plan contains a package of four initiatives to reduce carbon dioxide emissions from fuel use. These efforts include:

- ◆ Reforming the Federal tax subsidy for employer-provided parking (Action #19);
- ◆ Adopting a Transportation System Efficiency Strategy (Action #20);
- ◆ Promoting greater use of telecommuting (Action #21); and
- ◆ Developing fuel economy labels for tires (Action #22).

Together, these four actions were projected to reduce emissions by 8.1 million metric tons of carbon equivalent compared to the baseline by 2000. The first three transportation actions target fuel consumption by reducing the rate of growth in vehicle travel by light-duty vehicles. According to the CCAP's technical appendix, light-duty vehicle travel was expected to grow approximately 2.2 percent annually without any

actions—from 2,030 billion miles in 1990 to 2,515 billion miles in the year 2000. Under the Action Plan, travel would be held to 2,470 billion miles in the year 2000, resulting in a reduction of 45 billion miles traveled and 6.6 million metric tons of carbon-equivalent in the year 2000.¹

The fourth transportation action was an attempt to reduce fuel consumption per mile of travel. This action sought to encourage consumers and businesses to purchase—and manufacturers to produce—more fuel-efficient tires in response to the labeling requirements. Efficient tires increase fuel economy (gallons of fuel used per mile) by 4 percent over average replacement tires with comparable performance. As a result, this action was expected to reduce greenhouse gas emissions by 1.5 mmtCE in the year 2000.

The federal funding required to carry out the transportation actions was estimated at \$89 million in FY1994–2000 for Action #20 (adopting a transportation system efficiency strategy), \$2 million for Action #22 (developing fuel economy labels for tires), and less than \$1 million for Action #21 (promoting telecommuting). Action #19 (reforming the federal tax subsidy for employer-provided parking) was expected to generate \$2 billion over this time period. These revenues were expected to more than cover the federal outlay for the CCAP actions, resulting in a net revenue increase of \$793 million for FY1994–2000 from the Action Plan. The value of energy savings to the private sector was projected to more than offset all private sector costs for transportation actions.

For a number of reasons, the US-proposed policies have not achieved their objective of reducing the rate of growth in transportation-sector emissions. Economic growth proved far more robust and energy prices were lower than anticipated. The Congress continued to look with disfavor on a wide range of Action Plan appropriations. Moreover, statutory prohibitions were imposed against any expenditure of Federal funds for tire labeling (and any tightening of US light-duty vehicle fuel efficiency standards).

As transportation is the fastest growing economic sector in terms of its contribution to the greenhouse gas burden, there could be added pressure in the future for action in the transportation arena. US support internationally for binding reduction targets in the years ahead (announced in Geneva in July 1996) suggests further steps may need to be considered.

Initiatives to Reduce Greenhouse Gas Emissions from Personal Motor Vehicles

On September 29, 1993, President Clinton, Vice President Gore, and the CEOs of Chrysler, Ford, and General Motors announced the Partnership for a New Generation of Vehicles (PNGV), a new and historic alliance between the Federal government and the domestic auto industry that aims to improve the environment by reducing vehicle pollution. Its long-term goal is to develop technologies for environmentally-friendly, fuel efficient, family size sedans that travel the equivalent of 80 miles per gallon without sacrificing affordability, performance, or safety. Beyond its impact on the environment, PNGV's success could help to create a globally competitive domestic auto industry, preserve US jobs (one out of twelve jobs in the US is transportation-related), and reduce US dependence on foreign oil.

On the government side of the partnership, there are seven Federal agencies and nineteen government labs in participation. The seven Federal agencies are the Department of Commerce (lead agency), the Department of Energy, the Department of Transportation, the Environmental Protection Agency, the National Science Foundation, the Department of Defense, and the National Aeronautics and Space Administration.

On the industry side, the partnership includes USCAR (the pre-competitive research organization of the Big Three auto makers) and over 300 suppliers and universities. Candidate technologies are being explored in such areas as power generation, energy storage, electronics, materials, manufacturing, and systems analysis. Significant technical progress has been made in the partnership—which is just now at its halfway mark.

Another recent effort in the US to relate transportation to climate change was the creation of an advisory committee named the “Policy Dialogue Advisory Committee to Assist in the Development of Measures to Significantly Reduce Greenhouse Gas Emissions from Personal Motor Vehicles.” In 1994, President Clinton appointed this committee to develop consensus on strategies to cost-effectively reduce greenhouse gas emissions from motor vehicles. More specifically, the goal was to develop consensus on three sets of policies that would, if adopted, most cost-effectively return emissions from cars and light trucks to 1990 levels by the years 2005, 2015, and 2025, respectively, with no increases in subsequent years.

This committee involved representatives of the auto industry, oil and utility industries, environmental and other public interest groups, states and localities, and Federal agencies. The group began meeting in September 1994 and issued an interim report to the President in March 1995. The Committee’s goal was to provide recommendations by late 1995, but it completed its one-year charter without reaching a consensus. The committee was unable to reconcile a number of positions. In particular, the environmental community favored tougher fuel economy standards, which the auto industry opposed. The automobile industry proposed higher fuel taxes, which the oil industry representatives rejected.

No consensus report was issued. The group, however, did make a great deal of progress in gaining expertise and collecting information on the question of how to reduce greenhouse gas emissions. The exercise was useful in compiling a list of approximately 65 policy options and existing estimates of their effectiveness, where available. It also developed new estimates of baseline VMT projections and new estimates of nationwide impacts of certain strategies (e.g. VMT reduction estimates). The process included informative briefings, bibliographies, and unpublished lists of policy options and estimates of their potential effectiveness.

In December 1996, a subset of the Advisory Committee issued a “Majority Report” that called for a package of policies that addresses both fuel economy and the cost of travel. This report described a variety of strategies and forecast the greenhouse gas reductions associated with each one. Although this report did not reflect consensus, it did reflect some of the considerable amount of work done by the Committee. This work may be useful in future discussions of federal policies to reduce greenhouse gas emissions.

A recent study performed by five national labsⁱ by the US Department of Energy (DOE) was released on September 15, 1997. While the study came out too late to be fully addressed in this report, its major findings are referenced to be as complete as possible within the time constraints. The DOE “5-labs” study presented the results of efforts to quantify the potential for energy efficient and low carbon technologies to reduce carbon emissions in the United States.² This report documented a wide array of advanced technology options that could be cost-effective by the year 2020. In addition, the study documented how four key sectors of the US economy (buildings, transportation, industry, and electric utilities) could respond to expansion of low carbon and energy efficient technologies.

Three main conclusions were drawn from the “5-labs” study: 1) a vigorous national commitment to develop and deploy energy-efficient and low-carbon emissions such that levels in 2010 are close to those in 1997 (for energy) and 1990 (for carbon); 2) carbon reduction necessary to stabilize US emission in 2010 may

ⁱ Argonne National Laboratory, Lawrence Berkeley National Laboratory, National Renewable Energy Laboratory, Oak Ridge National Laboratory, and the Pacific Northwest National Laboratory. Lawrence Berkeley and Oak Ridge were the co-leaders of this effort.

produce energy savings that are roughly equal to or exceed costs (in terms of energy savings to the nation); and 3) the next generation of energy-efficient and low-carbon technologies promises to enable the continuation of carbon reductions over the next quarter century.

In terms of transportation, the DOE “5-labs” study concludes that increased public sector funding for R&D in order to advance alternative energy sources is necessary, perhaps two to ten times the current level of effort. In addition, the DOE report concludes that technology has an enormous potential to reduce greenhouse gas emissions; however, its full effects will not be felt for two decades or more. Significant reductions will demand the consideration of meaningful public policy initiatives to advance new technologies. Some of the strategies addressed in the DOE “5-labs” study, as well as other types of technological and driver behavior strategies, will be discussed in more detail in the next chapter.

Building on the approach taken with PNGV and the conclusion of DOE’s “5-labs” study, the DOT and DOE announced on February 4, 1998, a new public-private research partnership to improve the efficiency of heavy duty bus and truck engines. This partnership is the civilian extension of the Department of Defense’s Advanced Vehicle Program. The goal of this research effort, now referred to as the Advanced Vehicle Partnership, is to demonstrate a 50-percent improvement in fuel efficiency by 2004 in vehicles that are commercially viable. Twenty million dollars has been dedicated to the effort with DOT and DOE contributing equally.

¹ US Department of Energy. Office of Policy, Planning, and Program Evaluation. *The Climate Change Action Plan: Technical Supplement*. March 1994. Table D13.

² Scenarios of US Carbon Reduction: Potential Impacts of Energy-Efficient and Low-Carbon Technologies by 2010 and Beyond, prepared for the Office of Energy Efficiency and Renewable Energy, US Department of Energy, by the Interlaboratory Working Group on Energy-Efficient and Low-Carbon Technologies, September 1997.